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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,027	11/02/2000	Hideshi Hattori	TJK/134	6830

26689 7590 06/23/2003

WILDMAN, HARROLD, ALLEN & DIXON
225 WEST WACKER DRIVE
CHICAGO, IL 60606

EXAMINER

PARKER, FREDERICK JOHN

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 06/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/705,027

Applicant(s)

Examiner

Group Art Unit

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE — 3 — MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 5/16/03
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-23 is/are pending in the application.
- Of the above claim(s) 14-20 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-13, 23 is/are rejected.
- ☒ Claim(s) 21, 22 is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 10
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/16/03 has been entered.

Election/Restriction

2. The restriction election of the previous application is carried over into this continuing application in accordance with MPEP 819. Non-elected claims 14-20 are accordingly withdrawn from consideration.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8,10,12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Adair et al US 5504877.

Adair et al discloses a process of forming a particle-polymer composite by coating a substrate surface with a cationic polymer, followed by exposing the coating to a suspension of particles (e.g. diamond, a carbonaceous substance per claim 10) that are absorbed and packed throughout the coating (fig. 3, abstract) per claims 1,2,5. The polymeric coating is a polyelectrolyte(per claim 6), preferably polyethylene imine (inherently water soluble, and which is taught to be "best suited" for the process by Applicant's specification page 22, 12-19), and the polymer-coated substrate is immersed in an aqueous suspension of diamond particles which adhere to the polymer as it contacts the water and swells (abstract; col. 4, 1-34). The polyelectrolyte polymers used by both reference and Applicant are the same and therefore would inherently possess the same swelling properties under the same conditions (Applicants admit swelling on spec. Page 8, last paragraph to top of page 9).

As to claim 3, Adair et al teaches use of a mask to form a patterned polymer coating on col. 2, 11-16.

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Column 3, 25-27 teaches the substrate is metal, plastic, glass, or ceramic per claim 4.

Regarding claims 6-8, Adair et al teaches that the polyelectrolyte polymer coating carries a positive charge which is opposite the negatively charged diamond particles (col. 4, 1-12).

Regarding claims 12-13, Adair et al teaches the dispersion solvent used is water as is claimed, which inherently possesses a dielectric constant greater than 2 (col. 4, 21-29).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 9,11,23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adair et al.

Adair et al is cited for the same reasons discussed above, which are incorporated herein.

Adair et al teaches on column 4, 21-26 that the diamond particles have a diameter of 0.1-10 microns and the particles make up 0.05-5 volume % of the dispersion, per claims 9 and 11. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made if the overlapping portion of the particle sizes and volume make-up of the dispersion disclosed by the reference were selected because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Wortheim* 191 USPQ 90.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the method of Adair et al using the disclosed

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ranges because they are demonstrated to be effective to form a particle-polymer composite.

As to claim 23, while the degree of swelling is not expressly discussed, since the materials of the polymeric polyelectrolyte layer are the same, and an aqueous suspension is used in both the claims and Adair et al, the time of immersion/ contact would have dictated the degree of inherent swelling, and one of ordinary skill would have determined the optimal time of immersion/ contact by routine experimentation to achieve a desired concentration of particles deposited and degree of adhesion, which are common and ordinary process variables which would have been within the purview of one of ordinary skill in the art. It therefore would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Adair et al by adjusting immersion/ contact time for the polyelectrolyte polymer layers and aqueous particle suspensions to optimize the properties of the final particle-coated article.

8. Claims 21-22 are objected to as being dependent upon a rejected base claim, but would be allowable for the same reasons already on the record if

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rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Remarks

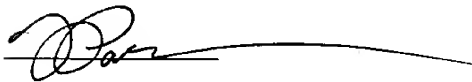
Applicant states the particles are packed "in" the polymeric material and argues this distinguishes over the prior art. The Examiner disagrees, and notes that since the process as claimed is otherwise identical to the process of Adair et al, there is no evidence or rationale to believe that the results would differ. Since the polymer layers of both are the same (and inherently swellable in the presence of water), and both are contacted with comparable aqueous particle dispersions, both would have been reasonably expected to have reacted similarly, including how the particles interact with the polymer layer.

If Applicant's results are truly different from those of Adair et al despite using the same process steps, it must be assumed that there is an omission of a critical step in Applicant's process that causes the difference. This might trigger a 35 USC 112/ first paragraph rejection if Applicants persist in the position regarding current claim 1. Thus, the process steps of claims 1-13 and 23 remain rejected under Adair et al, and the limitation of packing particles "in" the polymer layer would have been reasonably expected to have occurred in both Adair et al

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and Applicant's claims, as currently presented, because all other aspects of the process of claim 1 are the same.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred J. Parker whose telephone number is (703) 308-3474.

A handwritten signature in black ink, appearing to read 'Fred J. Parker', with a long horizontal line extending to the right.

**FRED J. PARKER
PRIMARY EXAMINER**

Fred J. Parker

June 19, 2003

rce9-705027